Note: Attempt all questions. All questions carry equal marks.

1. Attempt any two of the following:
   (a) Discuss PIGMENT/BINDER geometry when unlimited amount of binder is added into limited amount of pigment.
   (b) Define PVC, CPVC and RPVC. Discuss how the physical properties that exhibit optimum performance at critical PVC.
   (c) What are the general principles of Paint formulation? Give a typical formula for air-drying exterior synthetic enamel and explain briefly the functions of each of the ingredient used.

2. Attempt any two of the following:
   (a) Discuss the different steps in the paint manufacturing. Discuss the phenomena of wetting, grinding and dispersion.
(b) Discuss the importance of OIL ABSORPTION, DANIEL FLOW POINT CURVES and MILL BASE CONSISTENCY while dispersing a pigment into a vehicle.

(c) What are the important considerations in pigment dispersion.

3 Attempt any two of the following:
   (a) Explain the advantages and disadvantages of a modified ball mill. Describe a SAND MILL with the help of a schematic diagram. Show how a forceful grinding action is provided by such a small grinding media.
   (b) Describe the working of TRIPLE ROLL MILL. What are different arrangements of three rollers. Discuss the factors affecting the efficiency of TRM.
   (c) Distinguish between a BALL MILL and PEBBLE MILL. What is the effect of size, volume and grinding media on grinding. Give merits and demerits of ball mill.

4 Write short notes on any two of the following:
   (a) Let down conditions
   (b) Daniel flow point and Wet point
   (c) Fire hazards in a Paint Industry.

5 Attempt any two of the followings:
   (a) Discuss the principle involved in designing a Paint industry.
   (b) Discuss the safety measures being taken in a Paint factory.
   (c) Discuss the primary causes for the fire and explosion in a Paint industry.